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## APPENDIX.

## Geographical and Meteorological Observations, by the Chev.

Day.	Place of	State of the Atmosph			Direction o	f the Wind.		
Day.	Observation.	State of the Atmosphere.	12 — 4	4 — 8	8 — 12	12 — 4	4 8	8 — 12
1838. 16 XI.	29 51N. 17 9W.	Horizon gloomy; dull gleams of sun.	Fathoms. S.W.4	Fathoms. S.W, <sup>3</sup>	S.W.4S.4	S.W.4	s.w.3	S.S.W.3
17	30 23 18 40	Sky overcast; shower of ain; gusts of wind.	S.W.2	S.W.4	W.S.W.5	W.S.W.5	W.3	W.S.W.2
18	29 27 18 8	Sky bright and clear	W.S.W.3	S.W.1	S.W.2	W.S.W.5	W.3	W.2
19	28 40 18 <b>0</b>	Bright, with a few heaped }	,W.N.W.1	W.N.W.1	N.2	N.E.3	N.E.4 N.N.W.	N.W.? W.N.W.
20 21	27 38 18 6 27 30 18 8	Towards evening, air sultry and oppressive. Sun rose from narrow bright	N.E.2	N.E.2	N,E,1	N.N.W.12		
		horizon below a rectilineal base of heavy clouds.			S.S.W.14	S,W.14	N.N.W.3	N.2
22	26 52 18 53	Morning, sky overcast; about noon, light on the horizon in N.N.W., with heavy heaped clouds * S.S.E.	N.1	N.W.1 2	N.W.1	N.N.W.14	N.N.W.2	N.N.W.1
23	26 31 19 29	Sky overcast, with gleams ) of sun.	N.N.W.2	N.N.W.2	N.N.W.1	N.N.W.13	N.N.W.34	$\frac{N.^3}{N.N.W.}$ $\frac{N.E.}{N.E.}$
24	26 03 20 43	rainy clouds from E. to W. through whole S.	N.E.3	N.E.3	N.E.3 E.S.E.	E.3	E.5	E.5
25	25 07 22 39	Gloomy sunrise; 9h. bright from N.; evening, slight showers† in S.	E.6	E N.E.41	N.4E.54	E.5	E.54	$\mathrm{E}^{.5rac{1}{2}}$
26	24 17 25 20	Alternate gleams of sun and wet fog §	E.E.N.E.5	E.S.E.	E.5.1 E.S.E.	$\mathrm{E}^{.6rac{1}{2}}$	E.7	E.6
27	23 29 27 59	Morning, dull gleams of sun, then overcast; evening, fiery sun-set.	E. <sup>6</sup> ½	E.6	E.61/2	E.6	E'e	E 5 ½
28	22 48 30 16		5 1/2	4	4	5	5 ½	61
29	21 58 33 19	Morning, slight showers† in N. and E.; brighter sky, with heaped clouds.*	E.	E.	E.N.E.	E.	E.	E. N.E.
30	21 17 36 25	Bright day, with fleecy; clouds; at noon wet fog, from thin misty clouds.	E.N.E.	E.N.E.	E.S.E.	ES.E.	E.S.E.	E.
1 XII.	20 27 39 05	Clear sky, with fleecy ; }	E.6	E.4S.7	E.4S.7	E.S.E.5	E.S.E.6	E.S.E. 7
2	19 49 42 15	white stormy clouds, with short spurts of rain.	E.S.E.7	E.S.E 74	E.S.E.7	E.S.E. <sup>6</sup> ½	E.S.E.61	E.S.E.7
3	19 03 44 49	Bright, with pale sky; and } in afternoon fleecy ‡ clouds.	E.S.E.7	E.S.E.6	E.S E.5 ½	È.5½	E.6	E.S.E.6
4	17 55 47 11		6	61	6	5	51.	E.51
5	17 16 49 09	Clear light blue and cloud-	E.5	E.4	E.5	Ез	E.4	E.41
6	16 41 50 51	Sun rose from a misty horizon; a few scattered heaped clouds; *in afternoon, storm in the N., sun set in a pale grey heaped cloud. *	41	5	4	3	3	31
7	16 19 52 12	Sun rose and set with rainy clouds; morning, stormy, clouds in E.; rest of day, blue sky with few heaped clouds.*	21	3 ½	412	4 į	4	N E.4

<sup>\*</sup> See p. 97.

<sup>\*</sup> Haufwolken-Cumulus?

<sup>†</sup> Strichregen.

EMAN. FRIEDERICHSTHAL, from Nov. 1838, to Jan. 1839.

Colour of the	Course							Tì	iermo	metr	rical (	Obser	vatio	ns, C	elsi	ius	or C	entign	ade	e.
Sea.	Waves.		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	
	w.	Air. Sea.	•••		21.7		::	::	22.4		::	•••	::	::		•		22.6		
	w.	Air.			22.3		::	::	23.0					::			::	22.4		In evening lightnin
	N7 337	Sea.		١	21.6		••	••	22.2		••	•••			•.•		• •	21.9		in E.
	N.W.	Air. Sea.	::	::	22.4	::	::	::	21.8		•••						••	21 9		
			1	1	l				22 · 3									21.5		
		Air. Sea.	::	::	21·3	::	::	::	21.4		•••				• •		••	21 3		
		Air.			22.4				23.2									22.4		Current S.S.W.
	0.4177	Sea.	1	••	22.4	1	••	••	23.1											
	S.S.W.	Air.	•••		22.0		::	::	23.8		::	::	::	::	••	::	••	21.4		,,
	14.14.14	Sca.		١	0			''									••			
Dark pearly grey.	N.N.W.		١.,		21 · 1				22.3									20.7		,,
		Sea.		••	22.3				22.6	•••	••			•••		• •	••	22.4		
Morning, greyish	W.S.W.	Air.			21 . 6				22 . 9						<b> </b>			22 • 4		
lue; later, pearly rey.	W.N.W.	Sea.	••	•••	22.8	••			22.9	•••						•••	••	21.4		
,.													l							
Dark grey.	w.n.w.	Air.			23.6	١	١	١	24.3			١	<b> </b>	١			٠.	22.0		
Dain gley.	E.N.E.	Sea.			22 . 7	::	::		23.0		::	::	::	::				22.0		
	** ** **				an		1													
• • •	N.N.E.	Air. Sea.	••	••	23.0	::	::	::	23.5		::	::	::	::			••	22.1		
	71 27 22											''		"			•••			
Steel grey.	E.N.E.	Air. Sea.	::		22·6	::	::	::	22.8	::	::	1::		::		::	::	22 9		
Noon, light		Air.			22.9		::		33.8	••		::	::	::	::			23.0		
pearly grey;		Sea.	••		23.1	••	•••	•••	23.8	•••	•••						••	22.1		
dark grey. Pearly grey.		Air.			25.0				25.0						<b> </b>		١	24.0	1	
		Sea.			53.6	••	•••	••	23.8	1	••	•••	••				••	23.6		
Morning, pearly rev; later, dark	• •	Air. Sea.	::	::	24.0	::	::	::	24.1		1::	::	::	::	1::		::	24.1		
olue.											1			1	'					
Morning, dark;	• •	Air.	٠.	٠.,	24.6				25 4				••	•••			••	24.5		
ater, light blue.		Sea.	••	•••	25.0	••	•••		25.0			•••		•••			••	24.6		
Azure.		Air.	• •	• •	25.0		••		25 9				••		١.		• .	24.9		
			B	••	25.0	••			25.0	1	••	••			•••	• •	••	23.4	1	
• • •	• •	Air. Sea.			25 0	25 . 9	26.4	27.4	26.9	25.1	26 1	26.0	25.4	25 '4	1	::	4	25·0		
		1						l	27.3	į	1	i	25 • 4	25.0	1		,	24.6		
		Sea.			25 · 4			••				25.2	٠.				٠.	25.1		
	• •	Air Sea.			25.4	26.6	27.4	27.3	25.6		26.2	26.5	25.8	::	.:	••	••	25.0		
			- 1	- 1					1		26.8		26.2				••	25.0	Į.	
		Sea.				••	••	••		25.5	••						::	24.8		
		A in				974		90.0		04.0	25	00	90.					05		Ei 3: 1: :
	• •	Air. Sea.				27.4	::	40°2		26.2	25.5	26.1	25.1		::		• •	25 1 24 6		Evening, lightning N. and N.N.E at the
İ																				same time; storm
		l																		to S.W.
	N.	Air.	••	••	26.0	26.1	26.6		26.5		26.0		26.0		•••	$ \cdot\cdot $	••	25.0		
1		Sea.	••	••	20.5	•••	••	••	••	••	26.5	••	••	••	• •	••	••	25.0		1

<sup>‡</sup> Stockenwolken.

								1
	Place of	State of the Atmosphere.			Direction of	f the Wind.		
Day.	Observation.	Same of the Atmosphere.	12 — 4	4 - 8	8 - 12	12 4	4 8	8 — 12
1838. 8 XII	0 , 0 ,, 16 12N, 53 52W.	Bright day, with few heaped clouds;* 8h. A.M. spurts of wind from N., with stormy clouds and a little rain; 9h. P.M. slight rain from N.	N.E.3}	N.5]	N.E.4 E.	E.N.E.5	E. <sup>5</sup> ½	E.N.E.5
9	16 22 56 09	Sunrise, fiery, with rainy clouds; line of clouds† from N.P. to S.W., with heavy showers; 5h. P.M. storm in N. and S., with rain; sun set in stormy clouds.	E.N.E.5	E.N.E. <sup>5</sup>	E.N.E.61	E'e	E. <sup>6</sup>	E.e
10	16 18 58 43	Bright day, with a few heap- ed clouds;* in morning a slight shower.	E.6	E.7	E. <sup>5</sup> ‡	E e <sup>‡</sup>	E.7	E.7
11	16 17 61 39 16 17	At night alternate showers; the same throughout the day from the E. with gusts of wind; at 4½ h. and 8½ h. P.M. heavy rain. At night alternate showers;	71	71	8	7	t	8
		A.M. stormy clouds in E. aud N.; P.M. heavy rain and a gale of wind from the E., horizon overcast all round.	8‡	913	8	9	8 ½	7
13	Between the Isles of Anti- gua and Mont- serrat. In even- ing, St. Eusta- chia on the E.	Bright day, with passing clouds;* showers from N. in morning, noon, and evening.	712	7	6 1	71	8.}	81
14	Morning, to the E. of Isles of San Juan and St. Thomas, & at 1 o'clock P.M. in the Harbour of St. Thomas	Bright day, with a few heaped clouds.	7 1	8.7	81	3		
15 <b>— 3</b> 0	,	Showers, with gusts of wind from the E. almost daily; particularly in the afternoon, clouds formed very rapidly.						
30	On E. of the Isle of Vico 18 11 67 24	Day bright, with few cumu- lating clouds late in even- ing, and at night a shower; sunset cloudy.				S.E.	E N.E <sup>5</sup>	E.N.E.5
31	17 27 69 39	Sunrise cloudy; day bright, with fleecy clouds; sun set with light grey stormy clouds; 7h. evening, show- ers in N.E. and S.W.	E.N.E.6	E.N.E.6	E.N.E.5	E.N.E.5	E.N.E.5	E.N.E. <sup>6</sup>
1839. 1 <b>I.</b>	16 42 71 40	Bright sunny day, with }	6		4	5	5	
2	15 55 73 7	feathery clouds. At noon, partial showers from thin misty clouds;	3	3	31	8	2	21
3	15 41 71 16	sunset fiery. Morning, stormy clouds in N.E.; noon and 3h. P.M. showers; evening, storm in N.	3	9	41	5	43	E.S.E.4;

<sup>\*</sup> Haufwolken-Cumulus.

	Course		_					Ti	erme	ometi	ical (	Obser	vatio	ons. C	els	ius	or C	entig	rad	e.
Colour of the Sea.	of Waves.		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	1
Dark blue.	•				23·4 25•6			24.4	24.2	24.5		25 · 7	25.8	25 • 0		••		24.3		therm. morning, 8h.
Pearl grey.	•	Air. Sea.	::		24·2 24·9	••	26.2	26.3		23·0 25·5	26 · 1	••	::	26.0			::	25·4 24·9		Evening, 7h., meteor of the magnitude of a star, moving horizontally from E. to-
Dark blue.		Air. Sea.	  :: 	 	26·1 25•5	25 · 4	27.2	::		26.6		27.4	26:6			••	::	26·1 25·5		wards W., vanished in the atmosphere. Evening, 7½h., in N.E. rainy cloud, at the point of which appeared a ball of fire
Dark grey.	E.	Air. Sea.	 		27 · 0 26 • 1	27 · 4	::	27•4	29.5	27·6 26·1		27.2	::	::		::	::	25°0 25°7	••	moon: extinguished
	N.E.	Air. Sea.			26°7 26°1	27.3	28.2		27.4	25·0 26·6		26.6	::	::	••	• • • •	::	25·1 25·4		Evening and night, strong flashes of light- ning in S.
Dark blue.		Air. Sea.		••	26°2	27.2				26·1 26·9		26.2	::	::			::	25°0 26°9		
		Air. Sea.		::	26.7	••	27.8	27.6	27.4	••	••	••	••	••	••	••	••	26*1	••	At night current from E. towards W.
		Air. Sea.	••	••		27•8 26·0			••	•	26.8	••	26 • 4		•••	•	25·5 24·5			
Dark grey.	E.S.E.	Air. Sea.			26·6 26·6	26.7	27·0	::		28·8 27·0	29·0	::	27.2	27:3	••		26·7 25·8			
Dark blue. Light blue.		Air. Sea. Air. Sea.	::		26·7 27·2	••	••		 28·7	26 3		29 · 3	27·0  27·4	 26 9	• • •			26·0 26·6 26·0 25·8	••	8h. P.M. lightning in E.
Light grey.	Е.	Air. Sea.			27·2 26·2	28.0	28.4	•	29 • 0	28·4 26·9	28.0	::	2 <b>7</b> ·0					26·7 26·8		

† Zugwolk.

	Place of				Direction of	f the Wind.		
Day.	Observation.	State of the Atmosphere.	12 — 4	4 — 8	8 — 12	12 — 4	4 8	8 — 12
1839. 4 I.	o , o , , 15 03N. 75 43W.	At night, 2h. p.m. heavy rain; morning, stormy clouds in E.*	N.E.4	N.E.3	N.E.2	E.2	1, 2, 5, 2 E.N.E.	0, 1, 3, 2 E.N.E.
5	14 41 76 31	Cloudy day, showers in the E. and N.; frequent gusts of wind.	E.N.E.2	E.S.E.2	E.S.E. <sup>2</sup>	N.N.E.	N.54	N.8
6	13 44 78 58	At night showers; in morning, horizon overcast S. and S.E.; bright day; P.M. rainy clouds in S.W.; evening, rainy clouds in E. and E.N.E.	N.74	N.74	N.74	N.N.E. <sup>63</sup>	N.N.E.8	N.N.E. <sup>7</sup>
7	12 53 81 39	In the night showers; in morning sky overcast; at 7h., 12½h., 2¾h., 6½h., and 8½h., showers; fiery sunset.	N.N.E.7	N.N.E.72	N.N.E.7	N.6	N.N.E.74	N.N.E.64
8	11 27 84 39	In morning sky overcast, then bright, with passing clouds; 11h. showers in N., passing on to W.; in even- ing sky overcast; gusts of wind.	e <del>1</del>	7 <u>1</u>	7	e <sup>‡</sup>	2 By lead	
9	Overnight driven near the	Sky overcast all day; sudden showers and fog, with	N.N.E.3	N.	N.	N.N.E.	N.N.E.	oms 15'. E.N.E. N.N.E.
10	mouth of the Colorado . 10 37 85 9	strong gusts of wind from all quarters.  In night sky overcast; in morning rain on horizon		single	gusts of	wind.		
		in S.W.W. N.W., with gleams of sun; 3h. p.m. showers from N.; 5h. p.m. from S.	N.N.E.34	N.N.E. <sup>2</sup>	2	S.W.3	N.E.3	5, 6, 2, 2 N.E.
11	•	In night sky overcast, with gusts of wind and showers; after sunrise bright; 9h. showers in E. and W.; at noon, wet fog from S.; in	2, 1, 3, 0 N.E.	0, 5, 0, 5 S.W.	3	0, 5, 2, 5 N.E.	3, 3, 2, 3 N.E.	4, 3, 1, 3 N.E.
12	11 11 middle of Grindstone Bay	evening, sky overcast, with showers in N. and S.; 7h., showers in W.N.W.; 8h., showers in E.; 10h., showers from N.E.; afternoon bright, with cumulus clouds.	N.E.4	N.E.43	N.W.3	E.13	E,2	E.3

S. Juan de Nicaragua-Mean Temperature

<sup>1839.</sup>S. Juan de Nicaragua... 14—20 Jan. Mean height by 11 barometrical observations, 2½ metres (8°2 feet) above the Acoyapa, Chief Fort of the 1 April.

Province of Chontales.

1 April.

2

3

<sup>\*</sup> Day, lines of clouds; noon and 3 p.m., showers;

<sup>[</sup>M. Friederichsthal uses Celsius's Centigrade Thermometer, of which  $5^{\circ} = 9^{\circ}$  Fahrenheit, commonly used by us; if, corresponding altitude of Fahrenheit's scale will be obtained—thus,  $26 \cdot 4$  C.  $\times \frac{9}{5} + 32 = 79 \cdot 52$  F.—ED.]

Colour of the	Course							Th	ermo	metri	cal O	bser	ration	ıs, C	elsi	us	or C	entig	rad	e.
Sea.	Waves.		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	
Dark blue.	E.N.E.	Air. Sea.			26·7 26·6	27.8	28.4	29 • 2	28.2	29·3 27·2	••	28.6		::				26.6		
Greyish blue.	٠.	Air. Sea.	::		27·6 27·3	29.2	29·3	29·4	29.2	29 • 0 27 • 0	::	28·1	27.6	::			::	26·7 27·5		
Dark grey.	N.N.E.	Air. Sea.	.:		26·9 26·7	::	::	27.0		27·0 26·9		••	27.4	::		•:		26·9 26·9		
Dark grey.	N.N.E. N.N.W.	Air. Sea			25·8 26·1	26.9	27.3	::	::	27·2 26·8	28.0		26.2	27 · 4		 		26 · 6		6h. P.M. Isle of Kay E.S.E. 1 league to N.
Dark blue.	E.N.E.	Air. Sea			27·4 26·7	27.6	28:1	27:4	26 . 9	24·6 24·8	25 • 2	24.4	26.0	••						Noon, Continent visible.
Pale stone green; afternoon, spray yellow.		Air Sea			::	24·3 25·6	::	::	::	::	25·5						••			Current from N. to S. 2, 3 knots.
Dark grey.	N.N.E.	Air Sea			27·5 24·8	27.5	::			26·8 27·2		26:1	::				::	26·5		
Dark grey; at noon light blue.		Sea Air			26·9 26·6	26.2	27.3	28.0		27.5		27.4					::	27·3		
Stone green.		Air Sea			24 · 4 26 · 4	25 . 5	26.6			26°9 26°6		27.0		27.2				25 · 5		Heaving the lead ½ leg. off St. Juan near the coast 7 fth.; entrance of the port 7 fth.; 250° from land 3 to 4 fath.

<sup>30</sup> inches; in interior of the earth, 26.4.

evening, rainy sky in S.E. and N.; sunset fiery.

therefore, any given number of degrees of the Centigrade be multiplied by 9, and divided by 5, and 32 be added to the amount, the

level of the Atlantic in a favourable state of atmosphere. Sum of the 2 scales 763.6 Mean Barom. Ob3., T. 27.7, t. 28.4.

<sup>,,</sup> Pacific, 11° 28' N. lat. Boca del Rio Giusala, 763°4 Mean Barom. Obs., T. 26°5, t. 25°7.